

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) ~~Method~~A method for chemically treating a liquid medium loaded with nitrates, ~~characterized in that it comprises at least one step of comprising~~ contacting zinc with said liquid medium, ~~whose~~wherein the liquid medium has a pH is less than 4.
2. (Currently Amended) ~~Method~~The method according to ~~Claim~~claim 1, ~~characterized in that further comprising maintaining the pH of said liquid medium is maintained by a regular adjustment, which consists in adding an appropriate quantity with the addition of acid to the liquid medium.~~
3. (Currently Amended) ~~Method~~The method according to ~~Claim~~claim 2, ~~characterized in that wherein~~ the acid is hydrochloric acid.
4. (Currently Amended) ~~Method~~The method according to ~~any one of Claims~~claim 2, and 3 ~~characterized in that wherein~~ the pH adjustment is carried out at least every half hour ~~for the duration of~~throughout the treatment.
5. (Currently Amended) ~~Method~~The method according to ~~any one of the preceding claims~~claim 1, ~~characterized in that wherein~~ the temperature of the liquid medium has a temperature greater than 20°C during the contacting step is greater than 20°C.
6. (Currently Amended) ~~Method~~The method according to ~~any one of Claims 1-4~~claim 1, ~~characterized in that wherein~~ the temperature of the liquid medium is has a temperature of approximately 20°C.
7. (Currently Amended) ~~Method~~The method according to ~~any one of the preceding claims~~claim 1, ~~characterized in that wherein~~ the zinc is in the form of a powder.
8. (Currently Amended) ~~Method~~The method according to ~~Claim~~claim 7, ~~characterized in that the ratio by weight between wherein~~ the zinc and the nitrates in solution is have a weight ratio of at least 5.
9. (Currently Amended) ~~Method~~The method according to ~~any one of Claims~~claim 7 or 8, ~~characterized in that wherein~~ the liquid medium is subjected to stirring~~stirred.~~

10. (Currently Amended) ~~Method~~The method according to ~~Claim~~claim 9, ~~characterized in that~~wherein the stirring is carried out by pulses or by static mixers.

11. (Currently Amended) ~~Method~~The method according to ~~Claim~~claim 9, ~~characterized in that~~wherein the liquid medium is ~~subjected to stirring or~~stirred at a speed of at least 0.55 m/s.

12. (Currently Amended) ~~Method~~The method according to ~~any one of the preceding claims~~claim 1, ~~characterized in that the initial concentration of nitrates in~~wherein the liquid medium ~~is~~has an initial concentration of nitrates greater than 25 mg/L.

13. (Currently Amended) ~~Method~~The method according to ~~any one of the preceding claims~~claim 1, ~~characterized in that the initial concentration of nitrates in~~wherein the liquid medium ~~is~~has an initial concentration of nitrates greater than 50 mg/L.

14. (Currently Amended) ~~Method~~The method according to ~~any one of Claims 1-6~~claim 1, ~~characterized in that~~wherein the zinc is in the form of chips.

15. (Currently Amended) ~~Method~~The method according to ~~Claim~~claim 14, ~~characterized in that~~wherein the zinc chips are degreased and rinsed with distilled water.

16. (Currently Amended) ~~Method~~The method according to ~~any one of Claims~~claim 14 ~~or 15~~, ~~characterized in that the contact surface area between~~wherein the zinc and the liquid medium ~~is~~have a surface area between them of at least 0.0156 m²/L.

17. (Currently Amended) ~~Method~~The method according to ~~Claim~~claim 16, ~~characterized in that~~wherein the contact surface area between the zinc and the liquid medium is approximately 0.25 m²/L.

18. (Currently Amended) ~~Method~~The method according to ~~any one of the preceding claims~~claim 1, ~~characterized in that~~wherein the liquid medium ~~consists of~~is drainage ~~waters~~water.

19. (Currently Amended) ~~Method~~The method according to ~~Claim~~claim 18, ~~characterized in that the concentration of nitrates in~~wherein the drainage water is water has a concentration of nitrates greater than 1 g/L.

20. (Currently Amended) ~~Method~~The method according to ~~any one of the preceding claims~~claim 1, ~~characterized in that the flow rate of circulation of~~wherein the liquid medium in contact with the zinc ishas a flow rate of circulation greater than 0.005 m/s.

21. (Currently Amended) ~~Method~~The method according to Claim 20, ~~characterized in that~~wherein the flow rate of circulation of the liquid medium in contact with the zinc is approximately 0.01 m/s.

22. (Currently Amended) ~~Method~~The method according to ~~any one of the preceding claims~~claim 1, ~~characterized in that it comprises, in addition, a step of electrolysis of~~further comprising treating the liquid medium by electrolysis.

23. (Currently Amended) ~~Method~~The method according to ~~Claim~~claim 22, ~~characterized in that~~wherein the electrolysis step consists in causingcauses the liquid medium (68) to circulate in at least one electrolysis cell (110a, 110b, 110c, 110d, 110e, 110f) in which a current circulates between two electrodes, an anodic electrode (109a, 109b, 109c, 109d) and a cathodic electrode (108a, 108b, 108c), respectively.

24. (Currently Amended) ~~Method~~The method according to ~~Claim~~claim 23, ~~characterized in that each~~wherein the cathodic electrode (108a, 108b, 108c) is produced by the compression ofcompressing carbon particles between two perforated plates (116b, 116b') into which at least one electrode forming means (117) is inserted while being connected to the negative pole of a generator.

25. (Currently Amended) ~~Method~~The method according to ~~any one of Claims~~claim 23 ~~or 24~~, ~~characterized in that~~wherein the anodic electrode (109a, 109b, 109c, 109d) is produced by the compression ofcompressing zinc chips between two perforated plates (118a, 118a', 118b, 118b') into which at least one electrode forming means (119b, 119c) is inserted while being connected to the positive pole of a generator.

26. (Currently Amended) ~~Method~~The method according to ~~any one of Claims 23-25~~claim 23, ~~characterized in that~~wherein the liquid medium (68) circulates in at least six electrolysis cells ~~(110a, 110b, 110c, 110d, 110e, 110f)~~.

27. (Currently Amended) ~~Method~~The method according to ~~any one of Claims 22-26~~claim 22, ~~characterized in that~~further comprising maintaining a pH of the liquid medium is maintained above 5 and preferably equal to 10 for the entire duration of theduring the entire electrolysis step.

28. (Currently Amended) ~~Method~~The method according to ~~any one of Claims 23-27~~claim 23, ~~characterized in that~~wherein electrolysis includes applying a potential applied between the anodic electrode ~~(109a, 109b, 109c)~~ and cathodic electrode ~~(108a, 108b, 108c)~~ ~~is of~~ approximately 2 volts for a current intensity between 1.5 and 1.8 amperes per L of solution treated.

29. (Currently Amended) ~~Device~~The device for chemically treating a liquid medium loaded with nitrates and with a pH less than 4, ~~characterized in that it comprises~~comprising at least one liquid nitrate reduction enclosure ~~(56)~~, which comprises a liquid inlet ~~(57)~~,
at least one zinc layer ~~(70, 85, 85b, 85c, 99a, 99b, 99c, 99d, 99e, 99f, 99g)~~,
a means for the circulation of said liquid medium, ~~(59)~~, through said zinc layer, and
a liquid medium outlet ~~(58)~~ of the enclosure ~~(56)~~, and in that the pH of the liquid medium is less than 4.

30. (Currently Amended) ~~Device~~The device according to ~~Claim~~claim 29, ~~characterized in that it comprises~~further comprising at least one pH regulator ~~(93a, 93b, 93c, 94, 95)~~, making it possible to maintain capable of maintaining the liquid medium at a pH of less than 4.

31. (Currently Amended) ~~Device~~The device according to ~~Claim~~claim 30, ~~characterized in that~~wherein the nitrate reduction enclosure ~~(56)~~ is arranged vertically and ~~it~~ comprises at least one zinc layer ~~(70, 85a, 85b, 85c, 99a, 99b, 99c, 99d, 99e, 99f, 99g)~~, which ~~is~~ transversely arranged over ~~the an~~ entire width of the enclosure ~~(56)~~ and ~~which is produced by the compression of zinc chips between two perforated plates (71, 72, 86a, 86a', 86b, 86b', 86c, 86c'), in that and~~ the liquid inlet ~~(57)~~ is arranged in ~~the~~ lower part of the enclosure ~~(56)~~, ~~in that and~~ the liquid outlet ~~(58)~~ is arranged in ~~the~~ upper part of the enclosure ~~(56)~~, ~~and in~~

~~that wherein~~ the device further comprises, in addition, a recirculation pump (59) ~~making it possible to ensure the~~ capable of ensuring circulation and ~~the~~ recirculation of the liquid from the inlet (57) to the outlet (58) by traversing all the zinc layers ~~(70, 85a, 85b, 85c, 99a, 99b, 99c, 99d, 99e, 99f, 99g).~~

32. (Currently Amended) ~~Device~~ The device according to ~~one of Claims 29-31~~ claim 29, ~~characterized in that the height of~~ wherein each zinc layer ~~(70, 85a, 85b, 85c, 99a, 99b, 99c, 99d, 99e, 99f, 99g)~~ is ~~has~~ a height less than 10 cm.

33. (Currently Amended) ~~Device~~ The device according to ~~any one of Claims 29-32~~ claim 29, ~~characterized in that~~ wherein the enclosure (56) comprises a system for stirring the liquid, ~~(75) making it possible to stir~~ capable of stirring the liquid circulating in the enclosure (56) above each zinc layer ~~(70, 85a, 85b, 85c, 99a, 99b, 99c, 99d, 99e, 99f, 99g)~~ by forming a corresponding stirring zone ~~(78, 92a, 92b, 92c, 99a1, 99b1, 99c1, 99d1, 99e1, 99f1, 99g1).~~

34. (Currently Amended) ~~Device~~ The device according to ~~Claim~~ claim 33, ~~characterized in that the stirring speed of~~ wherein the liquid in each stirring zone ~~(78, 92a, 92b, 92c, 99a1, 99b1, 99c1, 99d1, 99e1, 99f1, 99g1)~~ is ~~approximately~~ has a stirring speed of 0.85 m/s.

35. (Currently Amended) ~~Device~~ The device according to ~~any one of Claims~~ claim 33 or 34, ~~characterized in that~~ wherein at least one stirring zone ~~out of two~~ is connected to ~~the~~ a pH regulator.

36. (Currently Amended) ~~Device~~ The device according to ~~Claim~~ claim 35, ~~characterized in that~~ wherein the pH regulator ~~can comprise~~ further comprises at least one probe ~~(93a, 93b, 93c)~~ that measures the pH in the corresponding stirring zone ~~(78, 92a, 92b, 92c, 99a1, 99b1, 99c1, 99d1, 99e1, 99f1, 99g1),~~ a control enclosure (94) and an acid circulation pump ~~(95).~~

37. (Currently Amended) ~~Device~~ The device according to ~~Claim~~ claim 36, ~~characterized in that~~ wherein the pH regulator maintains ~~the~~ a pH ~~in~~ between 2 and 3 the corresponding stirring zone between 2 and 3.

38. (Currently Amended) ~~Device~~The device according to ~~any one of Claims 29-37~~claim 29, ~~characterized in that wherein the circulation speed of the liquid in the enclosure (56) is~~has a circulation speed of approximately 0.01 m/s.

39. (Currently Amended) ~~Device~~The device according to ~~any one of Claims 31-38~~claim 31, ~~characterized in that wherein the enclosure (56) comprises at least three zinc layers (70, 85a, 85b, 85c, 99a, 99b, 99c, 99d, 99e, 99f, 99g).~~

40. (Currently Amended) ~~Device~~The device according to ~~any one of Claims 29-39~~claim 29, ~~characterized in that it comprises, in addition, further comprising a zinc reduction enclosure (106), in which the liquid (68) circulates at the outlet of the nitrate reduction enclosure (56).~~

41. (Currently Amended) ~~Device~~The device according to ~~Claim~~claim 40, ~~characterized in that wherein the zinc reduction enclosure (106) comprises at least one electrolysis cell (110a, 110b, 110c, 110d, 110e, 110f).~~

42. (Currently Amended) ~~Device~~The device according to ~~Claim~~claim 41, ~~characterized in that wherein each cathodic electrode (108a, 108b, 108c) of the respective electrolysis cells (110a, 110b, 110c, 110d, 110e, 110f) is produced by the compression of carbon particles between two perforated plates (116b, 116b') and in that at least one electrode forming means (117) is inserted into the carbon grains particles and connected to the negative pole of a current generator.~~

43. (Currently Amended) ~~Device~~The device according to ~~any one of Claims claim 41 or 42~~, ~~characterized in that wherein each anodic electrode (109a, 109b, 109c, 109d) of the respective electrolysis cells (110a, 110b, 110c, 110d, 110e, 110f) is produced by the compression of zinc chips between two perforated plates (118a, 118a', 118b, 118b') and in that at least one electrode forming means (119b, 119c) is inserted into the zinc chips and connected to the positive pole of a current generator.~~

44. (Currently Amended) ~~Device~~The device according to ~~any one of Claims 41-43~~claim 41, ~~characterized in that wherein the zinc reduction enclosure (106) comprises at least three electrolysis cells (110a, 110b, 110c, 110d, 110e, 110f).~~

45. (Currently Amended) ~~Device~~The device according to ~~any one of Claims 42-44~~claim 43, ~~characterized in that~~wherein the zinc reduction enclosure (106) is vertical and the anodic electrodes (~~109a, 109b, 109c, 109d~~) and the cathodic electrodes (~~108a, 108b, 108c~~), which form the corresponding electrolysis cells (~~110a, 110b, 110c, 110d, 110e, 110f~~), are arranged transversely over ~~the~~an entire width of the enclosure (~~106~~), so that all the liquid circulating in the enclosure (~~106~~) traverses the electrolysis cells, in that the liquid inlet (~~111, 115~~) is arranged in ~~the~~a lower part of the of the enclosure (~~106~~), in that the liquid outlet (~~112~~) is arranged in an upper part of the enclosure (~~106~~), and in that the device of the invention further comprises, in addition, a recirculation pump (113) ~~making it possible to ensure the capable of ensuring~~ circulation and recirculation of the liquid from the inlet (~~111, 115~~) up to the outlet (~~112~~) by traversing all the electrolysis cells (~~110a, 110b, 110c, 110d, 110e, 110f~~).

46. (Currently Amended) ~~Device~~The device according to ~~any one of Claims 40-45~~claim 40, ~~characterized in that it comprises~~further comprising a pH regulator that maintains the ~~pH of the~~ liquid medium circulating in the zinc reduction enclosure (~~106~~) at a pH above 7.

Claims 47-48. (Canceled).

49. (New) The method according to claim 22, further comprising maintaining a pH of 10 in the liquid medium during the entire electrolysis step.